

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1 - 74 canceled

75 (new): A computer implemented method for generating an abstract model for a sequential design for verification of a given correctness property, comprising:

a) unrolling the sequential design time frames up to a finite depth k to create an unrolled design;

b) adding interface propagation constraints for each flip-flop in the sequential design, to capture equality between an input and output of said each flip-flop across successive time frames;

c) adding an initial value constraint for said each flip-flop in a first time frame;

d) adding the correctness property constraints at certain or all the time frames;

e) solving a resulting constraint satisfiability problem to determine whether the correctness property is violated on the unrolled design;

f) deriving an unsatisfiable core from the proof of unsatisfiability when the correctness property is not violated, where the unsatisfiable core is a subset of the constraints sufficient for showing that the problem is unsatisfiable; and

g) using said unsatisfiable core to derive an abstract model for further verification of the sequential design;

wherein the said unsatisfiable core is used to mark certain flip-flops and certain external constrain nodes,

the abstract model consists of combinational fanin cones of only the marked flip-flops and the marked external constraint nodes, such that outputs from the unmarked flip-flops are regarded as pseudo-primary inputs.

76 (new): The method of claim 75, wherein

a flip-flop is marked, if any of its corresponding latch interface constraints belong to said unsatisfiable core and

a flip-flop is marked, if its initial state value constraint belongs to the said unsatisfiable core.

77 (new): The method of claim 75, wherein

a flip-flop is marked, if any of its corresponding latch interface constraints belong to the said unsatisfiable core and

a flip-flop is not marked if only its initial state value belongs to the said unsatisfiable core, in which case a constraint for the initial input is added to the abstract model without adding the flip-flop.

78 (new): The method of claim 75, wherein

a lazy constraint is used instead of an eager 1-literal constraint denoting an initial value of a flip-flop,

wherein an initial value constraint such as (m) is replaced by $(m+y)(m+!y)$, where y is a fresh variable and $!y$ denotes negation of y .

79 (new): The method of claim 75, wherein
a lazy constraint is used instead of an eager 1-literal constraint denoting an environmental constraint, wherein an environmental constraint such as (m) is replaced by $(m+y)(m+!y)$, where y is a fresh variable and $!y$ denotes negation of y .

80 (new): The method of claim 75 wherein environmental constraints are added at said certain or all time frames.